J329708.P04

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Attorney Docket No. **3057.1B**

In re application of: Peter FIEKOWSKY et al.

Mail Stop Amendment

Application No. : 10/648,819

Group Art Unit : 2857

Filed : August 25, 2003

Examiner : Edward Raymond

For : SCANNED IMAGE ALIGNMENT SYSTEMS AND METHODS

Mail Stop Amendment
Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

Transmitted herewith is a **Preliminary Amendment E** in the above-captioned application.

____ Small Entity Status of this application under 37 C.F.R. 1.9 and 1.27 has been established by a previously filed statement.
_X_ A Second Resubmission of Request for Interference, with attached Appendices A, B, and C.
_X_ An Interference Initial Memorandum Form (PTO-850).
____ A Request for Extension of Time.
_X_ No additional fee is required.

The fee has been calculated as shown below:

Claims After Amendment	No. Claims Previously Paid For	Present Extra	Small Entity		Other Than A Small Entity	
			Rate	Fee	Rate	Fee
Total Claims: 7	*23	0	x25=	$	x 50=	$0.00
Indep. Claims: 2	**3	0	x100=	$	x200=	$0.00
Multiple Dependent Claims Presented			+180=	$	+360=	$0.00
Extension Fees for __ Month(s)				$		$0.00
			Total:	$	Total:	$0.00

* If less than 20, write 20
** If less than 3, write 3

____ Please charge my Deposit Account No. 19-0089 in the amount of $_____.
N/A A check in the amount of $____ to cover the filing/extension fee is included.
_X_ The U.S. Patent and Trademark Office is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 19-0089.
_X_ Any additional filing fees required under 37 C.F.R. 1.16.
_X_ Any patent application processing fees under 37 C.F.R. 1.17, including any required extension of time fees in any concurrent or future reply requiring a petition for extension of time for its timely submission (37 C.F.R. 1.136(a)(3)).

Edward J. Radlo Jr.
FOR Philip McGarrigle
Reg. No. 31,395

REG NO 28,962

File No. **3057.1B**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)
	)
PETER FIEKOWSKY *et al.*	) Examiner: Raymond, Edward
	)
Serial No. 10/648,819	) Art Unit: 2857
	)
Filed: August 25, 2003	)
	)
For: SCANNED IMAGE ALIGNMENT SYSTEMS AND METHODS	)
	)

COMMISSIONER OF PATENTS
P.O. Box 1450
Alexandria, VA 22313-1450

SECOND RESUBMISSION OF REQUEST FOR INTERFERENCE

Sir:

Applicants hereby submit their Second Resubmission of Request for Interference between the present application USSN 10/648,819 ("the '819 application") and United States Patent No. 6,591,196 ("the '196 patent").

REMARKS

Applicants hereby submit their request for declaration of an interference between the present application and the '196 patent to account for cancellation of claims 64 through 68. Concurrent with the submission of this paper, Applicants are filing an amendment in the '819 application, canceling claims 64 through 68.

To facilitate consideration of this request, Applicants attach a proposed PTO-850 "Interference Initial Memorandum" outlining the suggested interference.

I. Overview

On September 24, 2004, Applicants filed a Request For Interference under 37 C.F.R. § 1.607, requesting the Patent Office to declare an interference between the '819 application and the '196 patent and U.S Patent No. 6,768,820 to Yahkini *et al.* ("the '820 patent"). The September 24, 2004, submission fully complied with the procedural and substantive requirements of 37 C.F.R. §§ 1.607 and 1.608. However, the provisions of 37 C.F.R. § 41.100 *et seq.* now govern all contested cases before the Board. Interference proceedings are further governed by the provisions of 37 C.F.R. § 41.200 *et seq.*

On October 14, 2005, Applicants resubmitted the Request for Interference to formally comply with the "new" interference rules, *i.e.*, 37 C.F.R. § 41.200 *et seq.*, and to account for newly added claims 66, 67, and 68.

On December 9, 2005, representatives (Sarah Toomey and Edward Kenehan) for Applicants met with Interference Practice Specialist Hien H. Phan to discuss the previously submitted requests for interference. Applicants' requests for interference collectively suggested a single interference involving two applications assigned to Affymetrix (the present application and U.S. Application No. 10/828,613) and the two Yakhini '196 and '820 patents. Interference

Practice Specialist Phan advised Applicants' representatives that the declaration of interference would be facilitated by requesting two separate interferences, each involving a single patent and a single application. Accordingly, Applicants are now submitting appropriate papers to suggest two separate interferences involving: 1) the present application and the Yakhini '196 patent; and 2) the '819 application and the Yakhini '820 patent.

The courtesy extended by Interference Practice Specialist Phan to Applicants' representatives is most appreciated.

II. 37 C.F.R. § 41.202

37 C.F.R. § 41.202 requires a suggestion for interference to:

(1) Provide sufficient information to identify the application or patent with which the applicant seeks an interference,

(2) Identify all claims the applicant believes interfere, propose one or more Counts, and show how the claims correspond to one or more Counts,

(3) For each Count, provide a claim chart comparing at least one claim of each party corresponding to the Count and show why the claims interfere within the meaning of § 41.203(a),

(4) Explain in detail why the applicant will prevail on priority,

(5) If a claim has been added or amended to provoke an interference, provide a claim chart showing the written description for each claim in the applicant's specification, and

(6) For each constructive reduction to practice for which the applicant wishes to be accorded benefit, provide a chart showing where the disclosure

provides a constructive reduction to practice within the scope of the interfering subject matter.

III. 37 C.F.R. § 41.202(a)(1) - Identification of Patent

Applicants seek an interference with U.S. Patent No. 6,591,196 ("the '196 patent"), issued to Yakhini *et al.* on July 8, 2003.

IV. 37 C.F.R. § 41.202(a)(2) – Identification of Interfering Claims, Proposed Count(s), and Claims Correspondence

A. Interfering Claims

37 C.F.R. § 41.203(a) provides as follows:

> An interference exists if the subject matter of a claim of one party would, if prior art, have anticipated or rendered obvious the subject matter of a claim of the opposing party and vice versa.

Applicants' claims 46 and 59 are identical to the '196 patent claims 1 and 14, respectively. Therefore, these claims are believed to "interfere" within the meaning of § 41.203(a). The claim chart provided in Appendix A compares these claims as required under 37 C.F.R. § 41.202(a)(3).

B. Proposed Count

For the purpose of the suggested interference, Applicants propose a single Count defined as follows:

Claim 1 or 14 of the '196 patent

or

Applicants' Claim 46 or 59

C. Correspondence of Claims to Proposed Count

Under the provisions of 37 C.F.R. § 41.207(b)(2), a claim corresponds to a Count when the subject matter of the Count, if prior art, would have anticipated or rendered obvious the subject matter of the claim.

The claims of the parties that are believed to correspond to the proposed Count are as follows:

Yakhini *et al.* ('196 patent): Claims 1-18

Applicants (Fiekowsky *et al.*): Claims 46-49 and 59-61

Below, Applicants explain why the identified patent and application claims should be designated as corresponding to the proposed Count.

1. Designation of Yakhini '196 Claims 1-18

In accordance with 37 C.F.R. §§ 41.202(a)(2) and 207(b)(2), the '196 patent claims 1 through 18 should be designated as corresponding to the proposed Count because each claim would have been anticipated or rendered obvious over the proposed Count, treating the proposed Count as prior art to these claims.

Claim 1. Claim 1 of the '196 patent is specifically recited in the definition of the proposed Count. Therefore, claim 1 would have been anticipated by the proposed Count and should be designated as corresponding thereto.

Claim 2. Claim 2 depends from claim 1 and further defines data signals emanating from discrete positions on the surface of the molecular array (*i.e.*, fluorescent emission from fluorophores, radiation emitted by isotopes, and light emission from chemiluminescent moieties). Fluorescent and radiographic labeling techniques are disclosed in U.S. Patent No. 6,090,555 ("the '555 patent"), which has an effective filing date of December 11, 1997, and issued on July

18, 2000, to Fiekowsky *et al.* *See, e.g.*, column 2, lines 33-46; column 4, lines 18-23; column 5, lines 5-22; and column 7, lines 1-17 of the '555 patent. The '555 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e). U.S. Patent No. 5,631,734 ("the '734 patent"), which issued May 20, 1997, to Stern *et al.*, discloses fluorescent labels throughout the patent. *See, e.g.*, Abstract; column 1, lines 56-57; column 2, lines 14-21; and column 4, lines 54-57 of the '734 patent. The '734 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b). Radiographic labels are shown in U.S. Patent No. 5,143,854 ("the '854 patent"), which issued September 1, 1992, to Pirrung *et al.*, which was incorporated by reference at column 1, line 24 of the '734 patent. *See, e.g.*, column 3, lines 45-47 and column 6, lines 34-40. The '854 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b). Chemiluminescent labels for arrays are shown in U. S. Patent No. 5,800,992 ("the '992 patent"), issued September 1, 1998 to Fodor *et al.*, and its foreign equivalent WO 92/10588 (published June 25, 1992). *See, e.g.*, column 51, lines 55-58. The '992 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b). Therefore, claim 2 would have been obvious over the proposed Count in view of the '555, '734, '854, and '992 patents and should be designated as corresponding thereto.

Claim 3. Claim 3 depends from claim 1 and further specifies that each image of the number of images comprises an array of pixels, each pixel having a data signal intensity value. These features are disclosed in the '555 patent at column 5, lines 11-28; column 7, lines 11-42; and column 8, lines 33 to 58. These features are also described in the '734 patent at column 9, lines 19-37. Therefore, claim 3 would have been obvious over the proposed Count in view of the '555 and '734 patents and should be designated as corresponding thereto.

Claim 4. Claim 4 depends from claim 3 and further recites that the features of the

molecular array are arranged in a rectilinear grid, corner features are selected as marker features and estimating initial positions of selected marker features includes certain recited steps. Each of these features is disclosed in the '555 patent. *See, e.g.*, column 7, lines 8-63; column 8, line 20 to column 10, line 32. Additionally, U.S. Patent No. 6,349,144 ("the '144 patent"), which has an effective filing date of February 7, 1998, and issued on February 19, 2002, to Shams, shows the selection of an image region for grid placement by defining the four corners for grid placement either by user selection or by anchor features. *See, e.g.*, column 6, lines 7-14. The '144 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e). The '144 patent also discloses employing row and column values in the computation of a direction vector (*See, e.g.*, column 7, lines 17-55), and shifting each grid point towards regions with the highest intensity values, *i.e.* "peaks" (column 6, lines 36-43). Therefore, claim 4 would have been obvious over the proposed Count in view of the '555 and '144 patents.

Claim 5. Claim 5 depends from claim 4 and further recites calculating the row and column vectors. These features are described in the '555 patent at column 8, line 20 to column 10, line 32. Moreover, the '144 patent at column 7, lines 17-55, illustrates an example calculation of the direction vector for a bounding box. The bounding box includes "n" columns and "m" rows where a direction vector "d" is calculated for the bounding box. Also, the '144 patent discloses at column 6, lines 36-43: "Since it is assumed that the pixel intensity corresponding to DNA spots images 10 in the image region 18 are greater than their surrounding background 50 intensity values, the computer 34, according to the above steps, automatically shifts each grid point 24 towards local regions with the highest intensity values in subsequent iterations of said steps, wherein each grid point's location in the image frame 12 is modified." Furthermore, the '734 patent provides an illustrative example of histograms based upon a

measure of intensity that includes peaks. *See, e.g.*, Figure 6A, where the histograms are analyzed to identify the distinct peaks (steps 606 and 607, and column 16, lines 1-19). Therefore, claim 5 would have been obvious over the proposed Count in view of the '555, '144, and '734 patents.

Claim 6. Claim 6 depends from claim 3 and further recites calculating refined positions of the selected marker features within the image of the molecular array by blob analysis (binary large objects). Blob analysis was well known, prior to the filing date of the '196 patent, to be a standard method of calculating the positions of objects. *See,* U.S. Patent No. 6,289,382 ("the '382 patent"), which has an effective filing date of August 31, 1999, and issued on September 11, 2001, to Bowman-Amuah. *See, e.g.*, column 55, lines 30-35 of the '382 patent. The '382 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e). *Also see,* U.S. Patent No. 5,917,588 ("the '588 patent"), which has an effective filing date of November 4, 1996, and issued on June 29, 1999, to Addiego. *See, e.g.*, column 9, lines 16-34 of the '588 patent. The '588 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e). *See also,* U.S. Patent No. 5,845,007 ("the '007 patent"), which issued on December 1, 1998, to Ohashi *et al.* *See, e.g.*, column 1, line 63 to column 2, line 13 of the '007 patent. The '007 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b). *See also,* U.S. Patent No. 5,825,913 ("the '913 patent"), which issued October 20, 1998, to Rostami *et al.* *See, e.g.*, column 6, lines 23-29 of the '913 patent. The '913 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b). *See also,* U.S. Patent No. 5,371,690 ("the '690 patent"), which issued on December 6, 1994, to Engel *et al.* *See, e.g.*, column 7, lines 11-20; column 8, lines 9-20; column 14, lines 34-68; column 15, lines 42-52; and column 20, lines 20-39. The '690 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b).

Therefore, claim 6 would have been obvious over the proposed Count in view of the

'382, '588, '007, '913, and '690 patents.

Claim 7. Claim 7 depends from claim 6 and claims steps for generating the binary image and conducting the blob analysis. The steps for generating the binary image are obvious from conventional blob analysis, particularly in view of U.S. Patent No. 6,124,102 ("the '102 patent), which has an effective filing date of April 21, 1998, and issued on September 26, 2000, to Fodor *et al.* *See*, for example, claims 1 and 16 of the '102 patent. The '102 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e). The steps of claim 7 for generating the binary image were well known, prior to the filing date of the '196 patent, to be standard steps used in blob analysis. *See also,* the '382, '588, '007, '913, and '690 patents discussed for claim 6.

Therefore, claim 7 would have been obvious over the proposed Count in view of the '102, '382, '588, '007, '913, and '690 patents.

Claim 8. Claim 8 depends from claim 6 and also claims steps, including selecting different intensity bands for the pixels, for generating the binary image and conducting the blob analysis. The steps for generating the binary image are obvious from conventional blob analysis, particularly in view of the '102 patent. *See, e.g.*, claims 1 and 16 of the '102 patent. The steps of claim 8 for generating the binary image were well known prior to the filing date of the '196 patent to be standard steps used in blob analysis. *See also,* the '382, '588, '007, '913, and '690 patents discussed for claim 6.

Therefore, claim 8 would have been obvious over the proposed Count in view of the '102, '382, '588, '007, '913, and '690 patents.

Claim 9. Claim 9 depends from claim 3 and generally claims that a blob analysis is conducted such that blobs of appropriate size and location are generated. The manner of

conducting blob analysis recited in claim 9 was well known and obvious prior to the filing date of the '196 patent. *See also,* the '382, '588, '007, '913, and '690 patents discussed for claim 6.

Therefore, claim 9 would have been obvious over the proposed Count in view of the '382, '588, '007, '913, and '690 patents.

Claim 10. Claim 10 depends from claim 9 and recites using blob analysis to refine positions of strong features by analyzing appropriate regions of the array. The manner of using and conducting blob analysis recited in claim 10 was well known and obvious prior to the filing date of the '196 patent. *See also,* the '382, '588, '007, '913, and '690 patents discussed for claim 6. *See also,* the '144 patent at column 11, lines 41-58, which describes displaying a plurality of DNA spot images and analyzing the background and signal intensity values for each DNA spot relating to the analyzed difference values.

Therefore, claim 10 would have been obvious over the proposed Count in view of the '382, '588, '007, '913, '690, and '144 patents.

Claim 11. Claim 11 depends from claim 3 and recites using linear regression analysis to produce refined features. This technique was a standard, well known and obvious analytical tool prior to the filing date of the '196 patent. *See,* the '382 patent at column 168, line 58 to column 169, line 10. *See also,* U.S. Patent No. 6,228,575 ("the '575 patent"), which has an effective filing date of May 15, 1996, and issued on May 8, 2001, to Gingeras *et al.*, at column 22, lines 22 to 34 and claim 21. The '575 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e). *See also,* the reference book, "Matrix Computations" by Golub *et al.* ("the Golub reference"), cited at column 13, lines 47-51 of the '196 patent.

Therefore, claim 11 would have been obvious over the proposed Count in view of the '382 and '575 patents and the Golub reference.

Claim 12. Claim 12 depends from claim 11 and recites steps of the linear regression analysis. These steps were standard, well known and obvious prior to the filing date of the '196 patent. *See,* the '382 patent at column 168, line 58 to column 169, line 10. *See also,* the '575 patent at column 22, lines 22 to 34 and claim 21. *See also,* the Golub reference, cited at column 13, lines 47-51 of the '196 patent.

Therefore, claim 12 would have been obvious over the proposed Count in view of the '382 and '575 patents and the Golub reference.

Claim 13. Claim 13 depends from claim 1 and recites standard statistical methods and data processing techniques as applied to the array analysis. These methods and techniques were well known and obvious prior to the filing date of the '196 patent. In particular, prior to the filing date of the '196 patent, it would have been obvious to analyze data corresponding to weak and strong features and to determine which pixels are included in the extraction of signal from each feature or local background region using statistical methods for pixel outlier identification; determine averages and variances of data signal intensities for features of the molecular array and covariances for one or more pairs of data signal intensities; determine averages and variances for background data signal intensities; determine background-subtracted averages and variances of data signal intensities for features of the molecular array and background-subtracted covariances for one or more pairs of data signal intensities; normalize the data signal intensities, averages, and variances; and calculate ratios and variances of ratios of pairs of normalized data intensity signals. *See, e.g.*, U.S. Patent No. 5,858,659 ("the '659 patent"), which issued on January 12, 1999, to Sapolsky *et al.*, for disclosure on strong and weak features and background subtraction at column 8, line 60 to column 9, line 20. The '659 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b).

See also, U.S. Patent No. 6,045,996 ("the '996 patent"), which has an effective filing date of October 26, 1993, and issued on April 4, 2000, to Cronin *et al.*, for disclosure on outlier identification at column 9, lines 22-31. The '996 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(e).

See also, U.S. Patent No. 5,733,729 ("the '729 patent"), which issued to Lipshutz *et al.* on March 31, 1998, for disclosure of variances at column 9, line 65 to column 10, line 15. The '729 patent is a prior art reference against the '196 patent under 35 U.S.C. § 102(b).

Therefore, claim 13 would have been obvious over the proposed Count in view of the '659, '996, and '729 patents and should be designated as corresponding thereto.

Claim 14. Claim 14 is specifically recited in the definition of the proposed Count. Therefore, claim 14 would have been anticipated by the proposed Count and should be designated as corresponding thereto.

Claim 15. Claim 15 corresponds to the proposed Count for the same reasons that claim 2 corresponds to the proposed Count.

Claim 16. Claim 16 recites the system for performing the method of claim 14, which is recited in the definition of the proposed Count. Therefore, claim 16 would have been anticipated by the proposed Count and should be designated as corresponding thereto.

Claim 17. Claim 17 depends from claim 16 and recites multiple statistical methods and data processing techniques to apply to features in the array. These methods and techniques were well known and obvious prior to the filing date of the '196 patent. In particular, it would have been obvious to use a computer program to calculate background-subtracted averages, background-subtracted variances, and background-subtracted confidence intervals for data signal intensities integrated over features in the images corresponding to features of the molecular

array. *See also,* the '659 patent for disclosure of variances at column 7, lines 9-19 and column 9, lines 32-42.

Therefore, claim 17 would have been obvious over the proposed Count in view of the '659 patent and should be designated as corresponding thereto.

Claim 18. Claim 18 depends from claim 16 and recites multiple statistical methods and data processing techniques to apply to features in the array. These methods and techniques were well known and obvious prior to the filing date of the '196 patent. In particular, it would have been obvious to use a computer program to calculate background-subtracted averages, background-subtracted variances, and background-subtracted confidence intervals for ratios of pairs of data signal intensities integrated over features in the images corresponding to features of the molecular array. *See also,* the '659 patent for disclosure of variances at column 7, lines 9-19 and column 9, lines 32-42.

Therefore, for the same reasons claim 13 would have been obvious over the proposed Count in view of the '659, '996, and '729 patents, claim 18 would have been obvious over the proposed Count and should be designated as corresponding thereto.

2. Designation of Applicants' Claims 46-49 and 59-61

In accordance with 37 C.F.R. §§ 41.202(a)(2) and 207(b)(2), Applicants' claims 46-49 and 59-61 should be designated as corresponding to the proposed Count. Claims 46 and 59 are expressly recited in the definition of the proposed Count and, therefore, are anticipated by the proposed Count. Moreover, Applicants' claims 46-49 and 59-61 are the same as the '196 patent claims discussed above and, therefore, should be designated as corresponding to the proposed Count.

V. 37 C.F.R. §§ 41.202 (a)(4) and 41.202(d) – Applicant Will Prevail On Priority

Applicants' present application claims benefit through a series of continuation applications to an application filed on December 11, 1997, *i.e.*, USSN 60/069,032 ("the '032 application"). The chart set forth in Appendix B shows that the '032 application provides a constructive reduction to practice within the scope of the interfering subject matter.

In comparison, the earliest possible effective filing date to which the '196 patent may be accorded benefit appears to be June 6, 2000, *i.e.*, the filing date of USSN 09/589,046.

Therefore, Applicants have an effective filing date of about 2 ½ years (based on the filing date of the '032 application) prior to the earliest possible effective filing date of the '196 patent.

Thus, Applicants will *prima facie* prevail on priority based on a constructive reduction to practice that precedes the earliest possible constructive reduction to practice that may be accorded to the '196 patent.

VI. 37 C.F.R. § 41.202(a)(5) – Written Description For Each Claim In The Applicant's Specification

Applicants' claims 46-49 and 59-61 were copied from the '196 patent. Applicants apply the terms of claims 46-49 and 59-61 (corresponding to '196 patent claims 1-4 and 14-16, respectively) to the disclosure of the present application in the table set forth in Appendix C.

VII. 37 C.F.R. § 41.202(a)(6) – Applicants' Earliest Constructive Reduction To Practice

According to 37 C.F.R. § 41.201, a "constructive reduction to practice" means "a described and enabled anticipation under 35 U.S.C. § 102(g)(1) in a patent application of the subject matter of a count." Likewise, pursuant to 37 C.F.R. § 41.201, an "earliest constructive reduction to practice" means "the first constructive reduction to practice that has been continuously disclosed through a chain of patent applications including in the involved application or patent. For the chain to be continuous, each subsequent application must have

been co-pending under 35 U.S.C. §§ 120 or 121 or timely filed under 35 U.S.C. §§ 119 or 365(a)."

In the table in Appendix B, Applicants show a constructive reduction to practice in the '032 application for Applicants' claims 46 and 59, which are alternatively recited as defining the proposed Count.

For the purpose of the requested interference, Applicants are entitled to the benefit of the '032 application, filed on December 11, 1997, which constitutes a constructive reduction to practice of an embodiment within the scope of the interfering subject matter, as reflected in Appendix B. A constructive reduction to practice of an embodiment within the scope of the interfering subject matter has been continuously disclosed from the earliest filed application, the '032 application, through a series of applications, to the present application. Specifically, the present application is a continuation of U.S. Patent Application Serial No. 09/542,151, filed April 4, 2000, now U.S. Patent No. 6,611,767; which is a continuation of U.S. Patent Application Serial No. 08/996,737, filed December 23, 1997, now U.S. Patent No. 6,090,555; which in turn is a non-provisional of U.S. Patent Application Serial No. 60/069,032, filed December 11, 1997. Therefore, the '032 application is believed to constitute Applicants' earliest and continuously disclosed constructive reduction to practice of an embodiment within the scope of the proposed Count.

VIII. Conclusion

In view of the above, Applicants respectfully request the Examiner to advance this case to the Board of Patent Appeals and Interferences for the declaration of an interference between Applicants' present application and the '196 patent. Applicants respectfully request the Examiner to handle this matter on an expedited basis, taking into account the pending request for

interference filed in the '613 application with respect to the '820 patent. Specifically, Applicants suggest that the Board declare two separate interferences involving: 1) the present application and the Yakhini '196 patent; and 2) the '613 application and the Yakhini '820 patent.

Respectfully submitted,
AFFYMETRIX, INC.

Date: January 20, 2006

By FOR Philip L. McGarrigle
Reg. No. 31,395 REG NO. 28,962

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Appendix A

Claim Chart Comparing Interfering Claims

Applicants' Claim 46	USP 6,591,196 Claim 1
46. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising: receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array; estimating initial positions of selected marker features within an image of the molecular array; calculating refined positions of the selected marker features within the image of the molecular array; using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array; using the initial coordinate system to locate positions of strong features within one or more images of the molecular array; refining the positions of strong features	1. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising: receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array; estimating initial positions of selected marker features within an image of the molecular array; calculating refined positions of the selected marker features within the image of the molecular array; using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array; using the initial coordinate system to locate positions of strong features within one or more images of the molecular array; refining the positions of strong features

Applicants' Claim 46	USP 6,591,196 Claim 1
within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features; using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array; using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak	within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features; using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array; using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak

Applicants' Claim 46	USP 6,591,196 Claim 1
features calculated from the refined coordinate system.	features calculated from the refined coordinate system.

Applicants' Claim 59	USP 6,591,196 Claim 14
59. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising: a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array; a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and a computer for executing the computer program.	14. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising: a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array; a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and a computer for executing the computer program.

Appendix B

Applicants' Earliest Constructive Reduction To Practice

Applicants' Claims (recited in proposed Count)	**Disclosure in U.S. Application No. 60/069,032, Filed December 11, 1997**
46. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	Figure 3; Page 6, line 25 to page 7, line 7; Page 7, line 27 to page 8, line 19; Page 11, lines 15-27; Pages 18 and 19.
receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 27 to page 8, line 19; Page 11, line 22 to page 12, line 8.
estimating initial positions of selected marker features within an image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 12.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 2 to page 17, line 8.
using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array;	Page 15, lines 15-16; Page 16, line 2 to page 17, line 8.
using the initial coordinate system to locate positions of strong features within one or more images of the molecular array;	Figure 13; Page 16, lines 3-12.
refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features;'	Figure 13; Page 16, line 3-20.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	Page 16, lines 16-20.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system	Page 16, lines 16-20.

Applicants' Claims (recited in proposed Count)	Disclosure in U.S. Application No. 60/069,032, Filed December 11, 1997
to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and	
extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.	Page 11, lines 22-27; Page 15, lines 3-19.
59. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising:	Figure 3; Page 3, lines 17-19; Page 6, line 25 through page 7, line 7; Page 7, lines 17-19; Page 8, lines 14-19.
a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;	Figure 1; Page 8, lines 4-13; Page 11, lines 10-21.
a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and	Page 11, lines 18-27; Page 15, lines 14-29; Pages 18-19.
a computer for executing the computer program.	Figures 1 and 3; Page 6, line 25 through page 7, line 7; Page 11, lines 20-27.

Appendix C

Written Description In Applicants' Specification 10/648,819 For Claims 46-49 and 59-61

Applicants' Claim	Disclosure in Applicants' Present Specification
46. A method, embodied in a computer program, for automated extraction data from a molecular array having features arranged in a regular pattern, the method comprising:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 11, lines 14-26; Pages 18-20.
receiving a number of images of the molecular array, each produced by scanning the molecular array to determine intensities of data signals emanating from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8.
estimating initial positions of selected marker features within an image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 14.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 5 to page 17, line 12.
using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array;	Page 15, lines 17-18; Page 16, line 5 to page 17, line 12.
using the initial coordinate system to locate positions of strong features within one or more images of the molecular array;	Figure 13; Page 16, lines 6-15.
refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features;	Figure 13; Page 16, lines 6-23.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	Page 16, lines 19-23.

Applicants' Claim	Disclosure in Applicants' Present Specification
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and	Page 16, lines 19-23.
extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.	Page 11, lines 21-26; Page 15, lines 5-21.
47. The method of claim 46 wherein data signals emanating from discrete positions on the surface of the molecular array include: fluorescent emission from fluorophores incorporated into molecules bound to features of the molecular array; radiation emitted by radioisotopes incorporated into molecules bound to features of the molecular array; and light emission from chemiluminescent moieties incorporated into molecules bound to features of the molecular array.	Page 6, lines 9-21; Page 7, lines 26-27; Page 8, lines 3-6.
48. The method of claim 46 wherein each image of the number of images comprises an array of pixels, each pixel having a data signal intensity value.	Page 11, lines 21-26.

Applicants' Claim	Disclosure in Applicants' Present Specification
49. The method of claim 48 wherein the features of the molecular array are arranged in a rectilinear grid, wherein corner features are selected as marker features, and wherein estimating initial positions of selected marker features within an image of the molecular array further includes:	Figures 7A-7B, 9A-9B, 10, 11, and 12A-12D; Page 12, lines 17-22; Page 13, lines 10-18; Page 13, line 19 to page 14, line 14; Page 15, lines 5-15.
calculating row and column vectors by considering the values of pixels in rows and columns of the image;	Figure 10; Page 13, lines 5-18; Page 17, lines 1-12.
determining a first and last peak in the row and column vectors; and	Figure 10; Page 13, lines 19-23.
using pixel coordinates of the first and last peaks in the row vector to determine horizontal coordinates of the corner features and using pixel coordinates of the first and last peaks in the column vector to determine vertical coordinates of the corner features.	Figures 10 and 11; Page 13, line 24 to page 15, line 4.
59. A system for automated extraction of data from a molecular array having features arranged in a regular pattern, the system comprising:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 9, line 25 to page 10, line 10; Page 11, lines 14-26.
a scanning component that produces images of the molecular array representing intensities of data signals emitted from discrete positions on a surface of the molecular array;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8; Page 15, lines 1-12.
a computer program that processes the images of the molecular array produced by the scanning component to index features in the images of the molecular array corresponding to molecules bound to features of the molecular array and that extracts data from the indexed features within images of the molecular array; and	Page 11, lines 17-26; Pages 18-20.

Applicants' Claim	Disclosure in Applicants' Present Specification
a computer for executing the computer program.	Figures 1 and 3; Page 6, line 22 to page 7, line 4.
60. The system of claim 59 wherein data signal intensities emanating from discrete positions on the surface of the molecular array include: radiation emitted by radioisotopes incorporated into molecules bound to features of the molecular array; fluorescent emission from fluorophores incorporated into molecules bound to features of the molecular array; and light emission from chemiluminescent moieties incorporated into molecules bound to features of the molecular array.	Page 6, lines 9-21; Page 7, lines 26-27; Page 8, lines 3-6.
61. The system of claim 59 wherein the computer program processes the images of the molecular array and extracts data from indexed features within images of the molecular array by:	Figure 3; Page 6, line 22 to page 7, line 4; Page 7, line 24 to page 8, line 16; Page 11, lines 14-26; Pages 18-20.
receiving a number of images of the molecular array produced by the scanning component;	Figure 1; Page 7, line 24 to page 8, line 16; Page 11, line 21 to page 12, line 8.
estimating initial positions of selected marker features within an image of the molecular array;	Figures 10 and 11; Page 12, lines 9-16; Page 13, line 24 to page 14, line 14.
calculating refined positions of the selected marker features within the image of the molecular array;	Page 13, lines 5-18; Page 16, line 5 to page 17, line 12.
using the refined positions of the selected marker features to compute an initial coordinate system for locating features of the molecular array in the number of images of the molecular array;	Page 15, lines 17-18; Page 16, line 5 to page 17, line 12.
using the initial coordinate system to locate positions of strong features within one or more images of the molecular array;	Figure 13; Page 16, lines 6-15.

Applicants' Claim	Disclosure in Applicants' Present Specification
refining the positions of strong features within the one or more images of the molecular array by analyzing data signal intensity values in regions of the one or more images of the molecular array that contain the strong features;	Figure 13; Page 16, lines 6-23.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of weak features within the number of images of the molecular array;	Page 16, lines 19-23.
using the refined positions of strong features in the one or more images of the molecular array to calculate a refined coordinate system to locate positions of local background regions surrounding all strong and weak features within the number of images of the molecular array; and	Page 16, lines 19-23.
extracting data from strong features, and their respective local background regions, within the number of images of the molecular array using the refined positions of strong features within the number of images of the molecular array and extracting data from weak features, and their respective local background regions, within the number of images of the molecular array using locations for the weak features calculated from the refined coordinate system.	Page 11, lines 14-26; Page 15, lines 12-18.

Form PTO-850 (Rev. 01-10-2001) **INTERFERENCE INITIAL MEMORANDUM** Count #____

To the Board of Patent Appeals and Interferences:

An interference is proposed involving the following __2__ parties

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
Junior Party Yakhini et al.	09/589,046	06/06/2000	6,591,196	07/08/2003

If the involved is a patent, have its maintenance fees been paid? Yes ___ No ___ Not due yet __X__

Proposed priority benefit (list all intervening applications necessary for continuity):

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
USA	09/589,046	06/06/2000	6,591,196	07/08/2003

The claim(s) of this party corresponding to Proposed Count 1:
1-18

PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
Patented claims 1-18	N/A

The claim(s) of this party NOT corresponding to Proposed Count 1:
None

PARTY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
Senior Party Fiekowsky et al.	10/648,819	08/25/2003	N/A	N/A

If the involved is a patent, have its maintenance fees been paid? Yes___ No___ Not due yet X

Proposed priority benefit (list all intervening applications necessary for continuity):

COUNTRY	APPLICATION NO.	FILING DATE	PATENT NO., IF ANY	ISSUE DATE, IF ANY
USA	10/648,819	08/25/2003	N/A	N/A
USA	09/542,151	04/04/2000	6,611,767	08/26/2003
USA	08/996,737	12/23/1997	6,090,555	07/18/2000
USA	60/069,032	12/11/1997	N/A	N/A

The claim(s) of this party corresponding to Proposed Count 1:
46-49 and 59-61

PATENTED OR PATENTABLE PENDING CLAIMS	UNPATENTABLE PENDING CLAIMS
Patentable pending claims 46-49 and 59-61	None

The claim(s) of this party NOT corresponding to Proposed Count 1:
None

(Check off each step, if applicable) *INSTRUCTIONS*

- ☐ 1. Obtain all files listed above.
- ☐ 2. Confirm that the proposed involved claims are still active and all corrections and entered amendments have been considered. The patents must not be expired for, among other things, failure to pay a maintenance fee (Check PALM screen 2970).
- ☐ 3. If one of the involved files is a published application or a patent, check for compliance with 35 U.S.C. 135(b).
- ☐ 4. Obtain a certified copy of any foreign benefit documents where necessary (37 CFR 1.55(a)).
- ☐ 5. Discuss the proposed interference with an Interference Practice Specialist in your Technology Center.

DATE	PRIMARY EXAMINER (signature)	ART UNIT	TELEPHONE NUMBER
DATE	INTERFERENCE PRACTICE SPECIALIST or TECHNOLOGY CENTER DIRECTOR (signature)		TELEPHONE NUMBER